

which emphasis requires to be put in connection with the remark is that this striking "similarity, nay rather identity, of the shore vegetation" is due less, as Mr. Kurz appears to imply, to the general connection that subsists between the Andamans as a whole and Burma-Malaya as a whole than to a special connection that subsists between Diamond Island as the first segment, and the Andamans as the continuation of a special geographical district whereof both are *membra disjecta*—a connection quite as strikingly exhibited in these features wherein they together differ from Burma and Malaya as in the features wherein they alike agree with those two areas.



XIX.—*Noviciæ Indiæ.* III. *Some additional species of LABIATÆ.*—
By D. PRAIN.

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The account of the Indian LABIATÆ in the *Flora of British India*, vol. iv, pp. 604—705 was published in August 1885, and since then a number of forms new to India, including a few new to science, have been reported from outlying portions of the Indian Empire. Having been directed by Dr. King to arrange the Indian material of the order preserved in the Calcutta herbarium, and having had at the same time the advantage of the use of the material of the order in the Sabaranpur herbarium, kindly lent for study by Mr. Duthie, as well as of that in the private herbarium of Dr. Watt, kindly placed at my disposal by its owner, I have taken the opportunity to provide diagnoses of all the forms new to India arranged according to the method of the *Flora* and now present these to the Society in the hope that they may prove of interest to members who may be botanising in the field near the various Indian frontiers.

1. OCIMUM LINN.

6. OCIMUM EXSUL *Coll. & Hemsl.*; stems erect simple hispid, leaves shortly petioled decussately paired, rather thick, hispidly hairy beneath, glabrous above, narrowly obovate-lanceolate obtuse remotely obscurely toothed paler beneath, lateral veins about 7 pairs oblique distinct; racemes long lax, bracts small subrotund coloured, whorls 4-6 flowered pedicels short, *calyx* hirsute campanulate, 2 lower teeth contiguous very shortly acuminate aristate, fruiting enlarged dry, rigid conspicuously nerved upper lobe orbicular slightly recurved; *corolla* blue puberulous tube slender lower lip slightly concave upper 4-fid, filaments naked far

exserted upper pair slightly thickened at the base; *nutlets* ovate-orbicular, pale, smooth.—*Ocimum exsul* Coll. & Hemsl., *Jour. Linn. Soc.* xxviii, 112 (1890).

BURMA:—Meiktila, *Collett* n. 877.

Apparently perennial, stems more than 30 cm. high; leaves 2.5—3.5 cm. long, 0.75—1 cm. across, distinctly gland-dotted; racemes terminating in a few sterile coloured bracts, bracts 2.5 mm. diam., pedicels 1—4 mm., *calyx* 3 mm. long 2 mm. across (fruiting 8 mm. long 4.5 mm. across, lower teeth strongly aristate), *corolla* tube 8.5 mm. long, externally puberulous as are the lips, lower lip 3.5 mm. long; stamens 10 mm. long; *nutlets* 3 mm. diam.

A very interesting species unlike any Indian *Ocimum* and belonging to § *Ocimodon* (*Hiantia*); nearly related to the African *O. obovatum* and *O. filamentosum*.

7. ORTHOSIPHON BENTH.

* * * *Calyx-throat* naked, *stamens* far exserted.

8 b. ORTHOSIPHON PARISHII Prain; slender, glabrous, stem short or long, leaves decussately paired, pairs 3, lowest usually smallest evanescent, middle pair largest, all long petioled, ovate-acute gradually tapering from widish truncate or cuneate base, margin distinctly serrate or sinuate or entire, upper surface sparsely hairy under surface glabrous except the nerves, racemes very long, bracts narrowly ovate-acuminate slightly exceeding pedicels, *calyx* hirsute campanulate 2 lower teeth subulate, *corolla* blue, tube very slender $3\frac{1}{2}$ times as long, lower lip narrow concave, upper 3-fid, margins glabrous, filaments naked, twice as long as corolla; *nutlets* broadly oblong, compressed, minutely reticulately rugulose.

BURMA:—Tenasserim, *Parish*; Shan Hills Terai, 2000 feet, *Collett*; Meiktila, *Prazer*; Maymyo, *Dr. King's collector*.

Rootstock short nodular woody 1.5 cm. long 0.5 cm. thick, leafy stem 12—20 cm., internodes about 3 cm., petioles 2—5 cm. long; laminae of middle pair 7—13 cm. long 5—6 cm. across, of other pairs 3—7 cm. long 2.5—4 cm. across, racemes 6—14 cm. long, whorls 6-fld. about 2.5 cm. apart, bracts 5 mm. long, 1.5 mm. wide, margin ciliate hirsute, pedicels 3 mm. long; *calyx* 4 mm. long (in fruit 7.5 mm. long); *corolla*-tube 15 mm. uniform externally puberulous as are the lips, lower lip 6 mm. long 2.5 mm. across, upper lip 3 mm. long 5 mm. across, filaments inserted below apex of tube 24 mm. long, stigma clavate sub-capitate slightly notched, *nutlets* 1.75 mm. long 1 mm. across.

Nearest to *Orthosiphon stamineus* Benth. of which it repeats all the characters of flower and fruit, but which has much smaller leaves and an

altogether different habit. In habit this approaches *O. scapiger* Benth. from Nepal and Kamaon, as does another plant from Manipur (Watt n. 7718) which has been collected without corollas or fruit; the *calyx* in Watt's plant is like that of *O. Parishii* but the bracts are rather longer (7 mm.) and the pedicels distinctly shorter (hardly 1 mm.) while the leaves are in 4 (not 3) pairs, are deeply cordate at the base, and have branches in the axils of the 3 lowest pairs.

8. PLECTRANTHUS L'HERIT.

§ ISODON. (*F. B. I.* iv, 616).

* * * *Fruiting calyx indistinctly 2-lipped, shortly 5-toothed. Corolla* $\frac{1}{8}$ — $\frac{1}{3}$ in. long, tube straight equal at the base.

11 b. PLECTRANTHUS BRANDISII Prain; stems simple or branched ascending leafy puberulous, leaves petioled lanceolate serrate above the middle, puberulous beneath, subglabrous above, cymes paniced, *corolla*-tube short broad, lips subequal; fruiting *calyx* red-punctate scaberulous, 3 upper teeth acute, 2 lower broader triangular acute or sometimes obtuse; *nutlets* narrowly ovoid.

BURMA; Pegu, *Brandis* n. 813; *Kurz* nn. 575, 2401, 2405, 2406, 2407.

Stems slender angles obtuse 50—80 cm. long, branches spreading sometimes 30 cm. long, petioles 2—4 cm. long, laminæ 5—12 cm. long, 1.5—2.5 cm. broad, membranous; panicles pyramidal branches slender, flowers white speckled with red, stamens far exerted. Flowers in January.

Leaves and habit of *P. Walkeri* and *P. Stracheyi* with inflorescence of *P. striatus* and a speckled calyx like that of *P. Stocksii* to which this bears the relationship that *P. Stracheyi* bears to *P. striatus*. It is referred to in *F. B. I.* iv, 618 under *P. Stracheyi* by Sir Joseph Hooker as a plant very like but probably distinct from that species; the specimens available being neither in flower nor with fruit could not be then described.

* * * *Fruiting calyx longer than broad, 2-lipped or subequally 5-toothed. Corolla* $\frac{1}{8}$ — $\frac{1}{3}$ in. tube declinate or abruptly decurved (almost straight in *P. repens* and *P. Kurzii*), base usually gibbous.

16 b. PLECTRANTHUS KURZII Prain; stem simple ascending glabrous, leaves broadly orbicular obtuse, base cuneate entire narrowed gradually into the short petiole, above the middle few wide toothed, the terminal tooth always longest often very large and blunt, cymes in narrow racemes shorter than the stem, *corolla* tube nearly straight, cylindrical, obtusely spurred at the base above, stamens included, fruiting *calyx* glabrous teeth subequal subacute, *nutlets* small broadly ovoid.

SIKKIM ; Ratong to Yoksum, 2500—5000 feet, *T. Anderson, Kurz.*

Stems 30—40 cm. rather bluntly 4-angled flaccid, leaves 4—4.5 cm. long and 4—5 cm. wide thinly membranous, narrowed gradually into a petiole 1—3 cm. long, serrations 3—7 on each side, central tooth 0.75—1.5 cm. wide, panicles solitary and terminal or few axillary, 6—10 cm. long, lax-flid.

Most resembles *P. excisus* Maxim. but is smaller in all its parts.

20 *b.* PLECTRANTHUS PHARICUS *Prain*; shrubby dwarf tomentose or puberulous, leaves small sessile or subsessile ovate or rounded crenate, cymes in distinctly peduncled rather dense few-flid axillary racemes, corolla tube short wide, lips very large, fruiting calyx narrow sub-2-lipped subhispid strongly nerved, teeth acute, nutlets oblong.

EASTERN HIMALAYA : Phari, *King's collectors.* DISTRIB. S. Tibet.

Small shrubby, stems woody and rounded below, 4-angled above, 15—30 cm. high, leaves 1—1.25 cm. long under 1 cm. broad, glabrate above tomentose at least on the nerves beneath, peduncles 0.5—0.75 cm., calyx 4 mm. (in fruit 7 mm.) long, 2.5 mm. broad, 2 lower teeth $\frac{1}{2}$ longer than the 3 upper, tube contracted above nutlets in fruit, pedicels 2—3 mm., corolla 9 mm. long (tube 4 mm. long 2.5 mm. wide), lower lip 5 mm. long, nutlets pale faintly reticulated smooth, 2.5 mm. long 1.5 mm. broad.

A very distinct species, nearest to *P. melissoides* and *P. rugosus* between which it stands intermediate,

10.* HYPTIS JACQ.

1 *b.* HYPTIS CAPITATA *Jacq.*; erect, stem glabrate, leaves petioled ovate oblong ineised serrate glabrate on both surfaces, peduncles longer than the globose heads, bracts ovate-lanceolate or linear, calyx glabrous, teeth erect subulate shorter than tube.—*Hyptis capitata Jacq., Ic. rar. i, t. 114; Benth., DC. Prodr. xii, 106.*

LOWER BENGAL; introduced; *Kurz, etc.* DISTRIB. Tropical America, introduced into Formosa, Philippines and India.

An erect often branching annual, leaves 8—10 cm. long 5—6 cm. wide, nerves beneath minutely puberulous; heads 20—25 mm. ($\frac{3}{4}$ in. or over) in diameter, enlarging in fruit, bracts reflexed and often hidden, corolla longer than calyx.

12. POGOSTEMON DESF.

5. POGOSTEMON PURPURASCENS *Dalz.*; add to localities of *Flora of British India, iv, 632.*

MANIPUR; Kassome range, 3—4000 feet, *Watt n. 5078.*

After repeated examination I can find no character to separate the

Concan from the Manipur plant. This species therefore repeats the detached distribution exhibited by *Pogostemon paniculatus*, which occurs in Lower Burma and in the Western Deccan but apparently nowhere between. The principal difference between *P. purpurascens* and *P. parviflorus* consists in the former having longer calyx teeth and larger flowers than the latter.

24 b. *POGOSTEMON WATTII* C. B. Clarke; simple or branched, puberulous with reflexed hairs, leaves elliptic-ovate acuminate, dentate except the base, lamina decurrent on the long petiole, nerves densely elsewhere sparingly puberulous above, glabrous except the nerves beneath, spikes narrow terminal and axillary sparingly softly hairy, whorls close set or shortly interrupted, bracts minute linear, *calyx* distinctly pedicelled, tubular, hirsute externally on the nerves, teeth triangular the 2 lower slightly exceeding the 3 upper, *corolla* tube distinctly exserted, lobes puberulous, filaments sparingly puberulous, *nutlets* on a short gynophore.—*Pogostemon Wattii* C. B. Clarke, *Jour. Linn. Soc.* xxv, 59.

MANIPUR; Kassome range, 3—4000 feet; near Kongal Thana, 3500, *Watt* nn. 5079, 6613. ASSAM; Naga Hills, at Kohima, 4750, *Clarke*.

Stems 40—60 cm. rather slender terete, petioles 3—4 cm., laminae 6—9 cm. long 3—5 cm. wide, spikes 6—11 cm. long under 1 cm. wide, pedicels 3 mm., *calyx* 5 mm. lower teeth 1 mm., *corolla* 7 mm. long tube annulate within (the annulus of star-like processes and incomplete behind where the style is lodged), stigma shortly 2-fid, *nutlets* 1 mm., gynophore 0.5 mm.

A very distinct species.

13. DYSOPHYLLA BLUME.

* Calyx tube terete or obscurely angled.

† Leaves opposite.

3 b. *DYSOPHYLLA ANDERSONI* Prain; dwarf, stout, erect, stems and leaves on both surfaces adpressed pubescent, leaves sessile lanceolate or oblong-lanceolate acute quite entire, spikes short, stout, softly tomentose, *calyx* short glabrescent, teeth bluntly triangular half as long as tube.

SIKKIM; Terai, *Dr. T. Anderson*.

Stems only 8—15 cm. branched, branches erect stoutish woody, leaves 3—4 cm. long, 1 cm. wide, spikes 15—20 mm. long 10 mm. wide, sessile, whorls confluent, *calyx* in fruit 2 mm. long teeth erect, teeth hirsute, tube glabrous externally, *corolla* tube included, lobes sparingly hairy, *nutlets* globose, smooth, shining, red-brown not trigonous.

Allied to *D. rugosa* and to *D. salicifolia* but very distinct from both.

4 b. *DYSOPHYLLA COMMUNIS* Coll. & *Hemsl.*; annual, puberulous, leaves large, membranous, oblong, obtuse, narrowed at the base into a long winged petiole, margin widely crenate, sparsely hirsute with flaccid white hairs on both surfaces, spikes 1—3½ in., *calyx* cylindric, puberulous, equally 5-toothed, *corolla* tube not exceeding calyx.—*Dysophylla communis* Coll. & *Hemsl.*, *Jour. Linn. Soc.* xxviii, 114 (1890).

BURMA:—Shan hills at 4000 feet, very common.

Sparingly branching, branches 4-angled, internodes usually shorter than the leaves; leaves as much as 3½ in. long, paler beneath, the lateral nerves (about 4 pairs) prominent, flowers rose-pink subsessile and aggregated in dense spikes, *corolla* 1½—2 lines long, externally pilose; filaments shortly exserted, *glabrous*. *Nutlets* not seen.

“This approaches *D. auricularia* Blume, which is easily distinguished by the thicker substance of the leaves and by being densely “villous all over” (*Hemsl.* l. c.).

There is no example of this plant at Calcutta. It differs from all other species of *Dysophylla* in having naked filaments. The description is taken from the paper by General Collett and Mr. Hemsl. on plants from Upper Burma and the Shan hills collected by General Collett.

† † *Leaves in whorls of three or four (rarely more).*

9 b. *DYSOPHYLLA PEGUANA* Prain; slender, erect, simple or branched, uniformly adpressed puberulous, leaves 4 in a whorl sessile linear entire, spikes elongate, uninterrupted, tomentose, teeth of fruiting calyx erect.—*Dysophylla verticillata* Benth. var. ? *gracilis* Benth., *DC. Prodr.*, xii, 158.

PEGU; *Maclelland, R. Scott* n. 354, *Kurz* nn. 2401, 2405; Moulmein, *Griffith*.

Stems 30—40 cm. high, slender, as thick as a crowquill, branches erect, leaves 2.5—3 cm. long, 0.25 c.n. wide not deflexed, spikes 3.5—5 cm. long, 0.5 cm. wide, never interrupted, *corolla* tube very short, filaments far exserted, *calyx* densely hirsute externally, teeth in fruit erect, *nutlets* narrowly ovate, pale, shining.

Most like *D. verticillata* but very distinct owing to its adpressed hairy stem, its calyx more densely hirsute with teeth erect and not stellate patent in fruit, and its shining nutlets which are paler in colour rather longer and much narrower. One of the most distinct species of the genus.

15. ELSHOLTZIA WILLD.

7. *ELSHOLTZIA GRIFFITHII* Hook. f. var. *TYPICA*; add to localities of *Flora of British India*, iv, 644.

UPPER BURMA; Maymyo, 4000, *King's collector*.

var. *SACRA* Prain; glabrate, leaves petioled or sessile, linear, spikes

rather long terete dense-fld., *calyx* in flower narrow teeth triangular subequal.

UPPER BURMA; Shan Hills at Toungyi, 5000 feet, *Collett*, n. 57; Maymyo, 4000—4500, *King's collector*.

Stems 30—80 em., round, rigid, dark brown, leaves 3—5 em. long lower petioled upper sessile, 0·25—0 35 em. wide, coarsely serrate throughout, lower petioles 0·5—1 em. long; spikes 5—6 em. long, 1·25 em. wide, bracts setaceous not exceeding calyx, *calyx* pubescent, *corolla* tube $\frac{1}{2}$ longer than calyx, lobes puberulous.

A very distinct variety. Bundles of this are sold and used by Shans as votive offerings at pagodas.

21 b. ZATARIA Boiss.

Undershrubs with small orbicular leaves shortly petioled distinctly glandular punctulate, whorls axillary sessile or in pedunculate cymes and paniculate towards the ends of the branches, flowers very small. *Calyx* 5-nerved ovate equally 5-toothed, teeth erect, mouth hirsute. *Corolla* tube sub-included, limb 2-lipped upper entire lower 3-lobed. *Stamens* 4 included lower slightly longer, anther-cells distinct parallel, at length diverging. *Style* shortly 2-fid upper lobe slightly shorter. *Nutlets* smooth.—Species 2, Oriental.

1. ZATARIA MULTIFLORA Boiss; much branched, branches slender white puberulous, leaves puberulous, whorls dense, axillary, sessile, bracts oblong equalling calyx, bracteoles shorter than calyx, *calyx* teeth much shorter than tube, *corolla* upper lip equalling the lateral lobes of lower lip, ovary subsessile.—*Zataria multiflora* Boiss., *Diagn. ser. 1*, v, 18; *Benth.*, *DC. Prodr.* xii, 183; *Boiss.*, *Flor. Orient.* iv, 561; *Hook.*, *Ic. Pl.* xv, t. 1428.

BELUCHISTAN:—Assigned districts, Quetta, *Lace*, n. 3936. **DISTRIB.** Persia.

Diffusely branching, leaves 0·75—1 em. long 0·5 em. wide, *calyx* 2·5 mm., teeth 0·5 mm., *corolla* 4 mm., long.

2. ZATARIA BRACTEATA Boiss; much branched, branches slender brown glabrous, leaves glabrous, whorls peduncled spiculate, spikes paniculate, bracts ovate acute longer than flowers, bracteoles linear as long as calyx, *calyx* teeth slightly shorter than tube, *corolla* upper lip much shorter than lateral lobes of lower lip, ovary shortly but distinctly stalked. *Zataria bracteata* Boiss., *Diagn. ser. 2*, iv, 12.—*Z. multiflora* *Benth.* in *Gen. Plant.* ii, 1186.—*Z. multiflora* var. *elatior* Boiss., *Flor. Orient.* iv, 562.

GILGIT; *Giles*. **DISTRIB.** Afghanistan.

Rigidly branching leaves 1—1·5 em. long, 0·75—1 em. wide, *calyx* 2·25 mm. teeth 0·75 mm., *corolla* 4 mm. long.

28. SALVIA LINN.

[*Salvia coccinea* Linn. is not infrequently found as an escape from cultivation in the Nilghiri hills, Sikkim etc. *S. utilis* Braun, and *S. verbenaca* Linn. also occur as escapes in the Nilghiris.]

§ EUSPHACE *Benth.* Shrubs or herbs, leaves entire or pinnatisect floral small or not, upper calyx lip very shortly 3-toothed, corolla tube subexserted annulate within, upper lip erect emarginate, connectives with an imperfect cell behind.

1.* SALVIA CABULICA *Benth.*; a branching shrub, leaves long-petioled small, soft villous, cordate ovate-orbicular, crenate, rugulose, floral small oblong lanceolate, whorls 2—4-flowered few, subterminal, *calyx* pedicelled campanulate 2-lipped, upper lip shortly 3-toothed lower 2-fid teeth all mucronate, *corolla* $2\frac{1}{2}$ times as long as calyx.—*Salvia cabulica Benth., DC. Prodr* xii, 268; *Boiss., Flor. Orient.* iv, 594.

PANJAB FRONTIER; Suleiman hills *Stewart, Duke, Hamilton.* DISTRICT. Beluchistan, Afghanistan.

Stems 60—100 cm. bushy, old branches with white flaking bark, young branches short slender rigid, petioles 0·5—1·5 cm., laminae 1—2 cm. long 1—1·5 cm. wide, pedicels 5 mm, *calyx* 11 mm., *corolla* 15 mm. (tube 11 mm. lips 4—5 mm.), *nutlets* 4 mm. suborbicular, often one or more abortive, testa mucilaginous when boiled.

A very distinct species, obtained by nearly every one who has collected within or beyond the N.-W. Frontier.

§ § HYMENOSPHACE *Benth.* Shrubs, rarely herbs, leaves entire or pinnatisect floral smaller, upper calyx-lip entire or shortly 3-toothed, corolla tube exserted or not, annulate within, upper lip suberect or falcate hardly compressed, connective with an imperfect cell behind.

1. * * SALVIA HYDRANGEA *DC.*; woody below, adpressed hoary, branches erect simple white, leaves petioled pinnatisect, segments 3—4-paired oblong obtuse entire pubescent or hirsute on both surfaces, lateral lanceolate-oblong or linear, terminal elliptic oblong larger, floral leaves sessile lower pinnatisect longer than flowers, upper ovate entire shorter than flowers coloured deciduous, whorls 6—10-flowered distant, flowers shortly pedicelled, *calyx* very large rose pink thinly membranous glabrous except the distinct sparingly hirsute nerves, lips large, upper broad blunt sinuate emarginate, lower 2-fid lobes ovate subacute, *corolla* tube slightly exserted.—*Salvia hydrangea DC. mss. in Benth., Lab. Gen. & Sp.* 717 and *Prodr.* xii, 271; *Boiss., Flor. Orient.* iv, 606.

PANJAB FRONTIER; Suleiman range; *Duke, Rind, etc.*; common, like the preceding, all along and beyond the N. W. Frontier.

Stems 60—100 cm., leaves 6—8 cm., petioles 0·5—1 cm., terminal

leaflet 3—4 cm. long 2 cm. across, lateral 1.5—2 cm. long 1 cm. across, *calyx* 20 mm. long, (tube 10 mm. long upper lip 20 mm wide, lobes of lower lip each 12 mm.), *corolla* 25 mm. (tube 20 mm. lips 5—6 mm.), *nutlets* smooth subglobose 4 mm. long.

A handsome species with a striking appearance on account of its large, delicate rose-pink calyces. The Panjab plant connects true *S. hydrangea* with *S. Sheilei* Boiss.

§ § § *ÆTHIOPIS Benth.* (Sect. 2; *F. B. I.* iv, 654).

5 b. *SALVIA MACROSIPHON Boiss.*, tall, slender, hirsute, leaves petioled rugose densely hirsute above and beneath oblong obtuse base rounded margin subentire, floral submembranous ovate long-acuminate shorter than calyx, whorls 2—4-flowered distant, *calyx* long tubular, teeth straight lanceolate acute, *corolla* white $1\frac{1}{2}$ times as long as calyx, tube exerted, upper lip suberect.—*Salvia macrosiphon Boiss.*, *Diagn.*, ser. 1, v, 11 (1844); *Benth.*, *DC. Prodr.* xii, 282 (1848); *Boiss.*, *Flor. Orient.* iv, 615 (1879).—*Salvia macrosiphon* VAR. *cabulica Benth.*, *DC. Prodr.*, xii, 282 (1848).—*Salvia macrosiphon* VAR. *Kotschyi Boiss.*, *Flor. Orient.*, iv, 615 (1879).—*Salvia Kotschyi Boiss.*, *Diagn.*, ser. 1, vii, 46 (1846).

PANJAB FRONTIER; Beluchistan, assigned districts, *Pitman, Duke*; Suleiman range, *Saunders*. DISTRIB. Beluchistan, Afghanistan, Persia.

Stem 40—60 cm., petioles 3—5 cm., leaves 4—8 cm. long 2—5 cm. wide, *calyx* 20—25 mm. long 7 mm. wide, *corolla* 25—30 mm., *nutlets* orbicular ovate subcompressed, pale green, shining and marbled with dark reticulations.

[*Salvia spinosa* Linn. and *Salvia Selarea* Linn. have been repeatedly collected just beyond the N.-W. Frontier but not as yet within British territory.]

28 b. ZIZIPHORA BENTH.

Dwarf annual herbs or spreading perennial small shrubs with rigid stems, often hoary-tomentose, with small entire or slightly toothed leaves, floral like cauline or shorter and broader, whorls few-flowered axillary often crowded towards the apex of the stem, flowers subsessile or shortly pedicelled, bracteoles very small, *calyx* tubular elongated 13-nerved 2-lipped (upper 3- lower 2-toothed), throat villous, teeth in fruit subconnivent, *corolla* small, tube hardly exerted glabrous within somewhat dilated upwards, upper lip erect entire, lower spreading 3-fid, mid-lobe emarginate; *stamens*, 2 perfect (anterior), ascending under upper lip or subexserted, anthers linear perfect or with the lower cell empty, upper staminodes small or 0, disc uniform, *style* 2-fid lower lobe longer, *nutlets* ovoid, smooth.—Species about 12; Cent. Asian, Oriental, Mediterranean.

* Perennial.

1. *ZIZIPHORA CLINOPODIOIDES* *M. Bieb.*; shrubby, branching from the base, leaves glabrous or pubescent, ovate oblong or lanceolate, floral similar smaller shorter than the flowers, whorls capitulate, *calyx* narrowly cylindric, teeth very short linear lanceolate blunt upper rather longer, *corolla* tube shortly exserted, anthers-cells equal.—*Ziziphora clinopodioides* *M. Bieb.*, *Flor. Taur.-Cauc.*, i, 17; *Benth.*, *DC. Prodr.* xii, 364; *Boiss.*, *Flor. Orient.*, iv, 585.

Rootstock stout woody, stems or branches usually numerous 6—15 cm. high, often fastigiate, leaves 0.5—0.75 cm. long 0.25—0.35 cm. wide, capitula 1.5 cm. long 2 cm. across, *calyx* 8 mm. long 2 mm. wide, *corolla* 11 mm. long.

The typical form of this variable plant does not occur within Indian limits, the following varieties are reported:—

a. VAR. *Benthami*; *calyx* pilose with white spreading hairs.—*Ziziphora clinopodioides* VAR. *canescens* *Boiss.*, *Flor. Orient.*, iv, 535 (1879) [*not Z. clinopodioides* VAR. *canescens* *Benth.*, *Lab. Gen. et Sp.* 321 (1833) and *DC. Prodr.* xii, 365 (1848)].—*Z. canescens* *Benth.*, *Lab. Gen. et Sp.* 621 (1833) and *DC. Prodr.* xii, 365 (1848); *Aitch. & Hemsl.*, *Trans. Linn. Soc.*, n. s. iii, 96 (1888).

N. W. HIMALAYA; Gilgit, *Giles.* DISTRIB. Soongaria, North Persia, Kurdistan, Armenia.

After close examination it seems impossible to deal with this plant otherwise than as *M. Boissier* has dealt with it. As regards floral structure it in no way differs from typical *Z. clinopodioides*. *M. Boissier's* varietal name is, however, preoccupied; it was employed by Mr. Bentham 46 years previously to designate precisely the plant termed by *M. Boissier*, *loc. cit.*, *Z. clinopodioides* VAR. *serpyllacea*.

β. VAR. *rigida*; *calyx* hirsute with adpressed hairs or almost glabrous.—*Ziziphora clinopodioides* VAR. *rigida* *Boiss.*, *Flor. Orient.*, iv, 586 (1879).

PANJAB FRONTIER; Beluchistan, assigned districts, *Lace.* DISTRIB. Beluchistan, Afghanistan, Persia, Armenia. Leaves usually much smaller and stems more rigid than in the other varieties.

* * Annual.

2. *ZIZIPHORA TENUIOR* *Linn.*; herbaceous, simple or branching from the base, leaves distinctly nerved scabrid ciliate narrowly lanceolate acute, floral similar longer than the flowers, whorls axillary along the stem in lax or dense oblong spikes, *calyx* narrowly cylindric, teeth very short triangular-ovate blunt, *corolla* tube shortly exserted, lower anther-cell small empty.—*Ziziphora tenuior* *Linn.*, *Sp. Pl.* 21; *Benth.*, *Lab. Gen. et Sp.* 322 and *DC. Prodr.* xii, 366; *Boiss.*, *Flor. Orient.* iv,

587; *Aitch. & Hemsl., Trans. Linn. Soc.*, n. s. iii, 96.—*Z. persica* Bunge, *Lab. Pers.* 39 (*vide Boiss.*).—*Faldermannia parviflora* Trautv., *Bull. Ac. Imp. Petersb.* vii, 21.

PANJAB FRONTIER; Sulciman range, *Duke*. DISTRIB. Beluchistan, Afghanistan, Persia, Asia Minor, Turkestan, Soongaria.

Root slender, stems 10—15 cm. high, leaves 1·5—2·5 cm. long 0·25—0·5 cm. wide, whorls often in spikes the whole length of the stem, 1·5—2 cm. wide, *calyx* 8 mm. long 2 mm. wide, *corolla* 11 mm. long.

29. NEPETA LINN.

A. Whorls in simple terminal oblong or cylindric spikes, which are rarely interrupted at the base. (*F. B. I.*, iv, 657.)

* * *Leaves entire or crenate sessile or subsessile.*

6 b. *NEPETA PODOSTACHYS* Benth.; stem tall subsimple glabrescent, rootstock elongated prostrate, leaves small sessile linear-lanceolate acute, base narrowed entire margin elsewhere coarsely serrate, spikes narrowed sometimes interrupted at the base, bracts linear-lanceolate mucronulate, *calyx* sessile, teeth very slender sparingly ciliate.—*Nepeta podostachys* Benth., *DC. Prodr.* xii, 372; *Boiss., Flor. Orient.* iv, 639.

WESTERN TEMPERATE HIMALAYA; Gilgit, at Ghizeh, 10,000 feet, in irrigated soil, *Giles*. DISTRIB. Afghanistan (*Griffith* n. 4000).

Stems 40—60 cm., rootstock 8—10 cm. slender, leaves 1—2 cm. long under 0·5 cm. wide, spikes 5—8 cm. long 1·5 cm. wide, bracts 5 mm. long, *calyx* 8 mm. long, tube 4·5 mm., teeth 3·5 mm., *corolla* 12 mm. long.

Nearly related to *N. campestris*, *nervosa* and *eriostachya* but well distinguished by its smaller leaves and narrower bracts. It bears to *N. nervosa* something of the relationship that *N. campestris* bears to *N. eriostachya*.

8. *NEPETA CÆRULESCENS* Maxim., *Mel. Biol.* xi, 306 (1881); *Forbes & Hemsl., Jour. Linn. Soc.* xxvi, 289 (1890).—*N. Thomsoni* Benth. *ms. ex Hook. f., Flor. Brit. Ind.* iv, 658 (1885).—DISTRIB. Lhasa (*Herb. Calcutta*); Kansu.

D. Whorls in branched panicles some or all more or less peduncled. (*F. B. I.* iv, 661.)

* *Corolla less than $\frac{1}{2}$ in. long.*

25 b. *NEPETA GLOMERULOSA* Boiss.; erect branched from the woody base, branches slender hoary tomentose simple or again branching, leaves small ovate, crenate, linear-rugose, shortly petioled below, sessile above, whorls small few-flowered lower pedunculate distant upper sessile in interrupted narrow spikes, bracts membranous ovate acute entire, equalling sessile hirsute *calyx* with oblique mouth and lanceolate teeth shorter than the tube, *corolla* $\frac{1}{3}$ longer than *calyx*, *nutlets* minutely tuberculated.

—*Nepeta glomerulosa* Boiss., *Diagn.*, ser. 1, v, 21; *Benth.*, *DC. Prodr.*, xii 379; *Boiss.*, *Flor. Orient.*, iv, 651.—*N. juncea* *Benth.*, *DC. Prodr.*, xii, 379; *Boiss.*, *Flor. Orient.*, iv, 651.—*N. glomerata* *Herb. Ind. Or.*, *nec Mont. et Auct.*

PANJAB FRONTIER; Suleiman range *Stewart, Duke.* DISTRIB. Beluchistan, Afghanistan, and Persia.

Stems 20—50 cm., petioles 0·5—1·5 cm., laminae 0·75—2 cm. long 0·5—1 cm. wide, lower peduncles 4—7 mm., bracts 3·5—4·5 mm. long, 2 mm. wide, *calyx* 5 mm. long, *corolla* 7 mm. long, *nutlets* 2 mm. long.

There are no very good characters whereby *Nepeta juncea* (the Panjab Frontier, Afghan and Beluch plant) can be separated from *Nepeta glomerulosa* proper (the Persian plant)—the secondary branches are more numerous, the leaves and bracts are rather smaller and the calyx teeth somewhat shorter in the more eastern form but the corollas and nutlets of the two are quite indistinguishable.

26 b. *NEPETA LAGOPSIS* *Benth.*; softy hirsute with spreading white hairs, much branched, branches slender, erect or prostrate, short or long, leaves small, short-petioled, ovate, obtuse, coarsely blunt-toothed, whorls dense softly hairy distant axillary sessile or on peduncles as long as the flowers, bracts subulate as long as the calyces, *calyx* teeth subulate almost as long as the tube, *corolla* hardly exerted.—*Nepeta lagopsis* *Benth.*, *DC. Prodr.*, xii, 397; *Boiss.*, *Flor. Orient.*, iv, 640.

WESTERN PANJAB; on Sheik Budeen, *Stewart, Saunders.* DISTRIB. Afghanistan (*Griiffith* n. 494).

Branches 10—40 cm., leaves 1—1·5 cm. diam., petioles 0·5—0·75 cm., pedicels 2—7 mm. long, *calyx* 5 mm. long, bracts 5—6 mm., *corolla* 8 mm.

Nearly related to the Persian *N. prostrata*.

* * *Corolla more than ½ inch long.*

31 b. *NEPETA HEMSLEYANA* *Oliv. mss. ex Hemsl. in litt.*; tall erect branched finely pubescent, leaves sessile narrowly ovate-lanceolate entire whorls 8—12-flowered distant axillary peduncled, *calyx* nerves hirsute teeth obtuse, triangular shorter than tube, *corolla* twice as long as calyx gradually expanded to wide limb, *filaments* prolonged beyond anthers, anther-cells at length confluent, *nutlets* narrowly ovate.

EASTERN HIMALAYA; S. E. Tibet beyond Phari, *Lama Ujyen Gyatsko* n. 93.

Stems 60—80 cm., branches 8—15 cm., leaves 2—3 cm. long 0·5—0·75 cm. wide, lower peduncles 4—5 mm., *calyx* 12 mm. long 3·5 mm. wide, *corolla* 25 mm. long limb 8 mm. wide, hirsute externally, *nutlets* 2 mm. long.

Characters of *Nepeta* (§ *Macronepeta*) but the stamens with filaments prolonged beyond the anthers as in *Hypogomphia*, and the anther-cells

at length confluent 1-ocular. This plant I had therefore at first thought might have to be generically separated from *Nepeta*, but Professor Oliver who has very kindly examined specimens at Mr. Hemsley's request finds this is unnecessary; the character of prolonged filaments occurs in other species of the genus.

E. Dwarf species; leaves crowded, cymes or whorls axillary, floral leaves as large as the cauline and close-set (*GLECHOMA L.*).

32 b. *NEPETA PHARICA Prain*; erect, sublanate, leaves sessile orbicular rugose crenate, cymes all axillary few-flowered shorter than the leaves, *calyx* softly tomentose sub-2-fid upper lip longer and with broader less deeply divided teeth than lower, tube villous within, *stamens* included or upper pair subexserted, *nutlets* linear oblong smooth.

EASTERN TIBET; Phari, *King's collector*; between Phari and Lhasa, *Lama Ujyen Gyatsko n.* 106.

Rootstock creeping, stems 4—10 cm., leaves 1.5—2 cm. across, very close set, base crenate, cymes sessile, bracts minute, *calyx* 9 mm. long, *corolla* 16 mm., tube straight slightly dilated at throat, *nutlets* 2.75 mm. long.

F. Annuals; calyx-mouth straight.

34. *NEPETA BRACTEATA Benth.*; dwarf, stem very slender branching from the base, branches spreading subrigid, leaves petioled oblong or rhomboid distant toothed apex acute base cuneate, floral leaves sessile surrounding and generally exceeding the dense heads, bracts numerous oblong or ovate longer than flowers, submucronate, prominently nerved with margins entire, whorls condensed in ovate heads, *calyx* teeth straight subulate ciliate half as long as tube, *corolla* tube included, *nutlets* oblong shining smooth.—*Nepeta bracteata Benth., DC. Prodr.* xii, 395; *Boiss., Flor. Orient*, iv, 667.—*Zataria humilis Benth., DC. Prodr.*, xii, 183.

BELUCHISTAN; assigned districts at Shelabagh, 6,000 feet, *Lace n.* 3331. **DISTRIB.** Persia.

Stems 5—15 cm., leaves 1.5—2 cm. long 1 cm. wide, floral leaves 1 cm. long, 0.35 cm. wide, bracts 8 mm. long, *calyx* 6.5 mm. long, *corolla* 8 mm. long, *nutlets* 2.5 mm.

30. DRACOCEPHALUM LINN.

4. *DRACOCEPHALUM HETEROPHYLLUM Benth.*; add to localities of *Flora of British India*, iv, 666.

EASTERN TIBET; Phari 11-14000 feet, *Dr. King's collectors*; Karoola, near Lhasa, *Dr. King's collector*.

7. *DRACOCEPHALUM TANGUTICUM Maxim., Mel. Biol.*, xi, 307 (1881).—*D. Hookeri O. B. Clarke in Hook. f., Flor. Brit. Ind.*, iv, 606 (1885).

EASTERN HIMALAYA; Phari, frequent, *Dr. King's collectors*; East Tibet, common, *Lama Ujyen Gyatsko*. DISTRIB. W. KANSU.

32. SCUTELLARIA LINN.

§ Flowers not secund.

* *Flowers in short leafy terminal spikes that are 4-angled in bud, bracts leafy.*

2 b. SCUTELLARIA STOCKSII *Boiss.*; dwarf, softly hirsute, woody at the base, much branched, old branches prostrate, young ascending, leaves small elliptic-oblong, shortly petioled, apex acute base cuneate margin entire, spikes few-flowered subcapitate, *corolla* pubescent much longer than calyx.—*S. Stocksii Boiss., Diagn. ser. 2, iv, 28; Flor. Orient., iv, 684.*

PANJAB FRONTIER; assigned districts of Beluchistan at Pil Rift near Quetta, *Lace n. 3881*. DISTRIB. Beluchistan (*Chechen Tun, Stocks*).

Habit of *S. prostrata* and *S. Heydei* but more compact and with shorter branches and fewer-flowered heads. Leaves 1 cm. long 0.75 cm. wide, bracts similar but smaller, heads few-fl. almost hidden by the leaves, *corolla* 18 mm. long.

A very distinct species.

* * *Flowers more or less laxly racemose.*

2 c. SCUTELLARIA MULTICAULIS *Boiss.*; much branched from a woody base, branches erect virgate simple slender shortly puberulous, leaves small hoary-tomentose and subglandular beneath, distinctly petioled, apex acute, base cuneate or subtruncate, margin bluntly or deeply few-toothed, flowers few distant opposite, bracts small ovate entire hardly exceeding calyx, *corolla* puberulous much longer than calyx.—*Scutellaria multicaulis Boiss., Diagn. ser. 1, vii, 61; and Flor. Orient., iv, 685; Benth., DC. Prodr., xii, 414.*—*S. nepetæfolia Benth., DC. Prodr., xii, 414.*

GILGIT; Hindu Kush, *Giles*. DISTRIB. Afghanistan, Persia.

Branches 20—25 cm. long, petioles 0.5 cm. long, laminae 1 cm. long 0.75 cm. wide, bracts 3.5 mm. long, *calyx* 3 mm. long, *corolla* 25 mm. long, yellowish with purple patches.

§ § Flowers opposite racemose secund.

* * * *Flowers in long narrow racemes, bracts shorter than the pedicel and calyx.*

4 b. SCUTELLARIA ANDAMANICA *Prain*; quite glabrous, stems many from a woody rootstock with clustered rootlets, erect, simple or branched, rigid, leaves long petioled oblong-lanceolate obtuse crenate-dentate except tapering cuneate base, flowers opposite or in whorls of 3 except the upper, *corolla* blue with centre of lip white, *nutlets* pale brown scabrid.

SOUTH ANDAMAN; Rungachang, in stream bed, 25 feet above sea-level, *Prain*.

Stems woody below and subterete, 4-angled above and grooved, 20—25 cm. high, leaves few, petioles 3—4 cm. almost equalling laminae 4—4.5 cm. long and 1—1.5 cm. across, crenatures 7—8 on each side absent from basal $\frac{1}{4}$ or $\frac{1}{3}$, racemes 8—10 cm., bracts 3 mm. long equalling pedicels, calyx 3 mm., corolla 16 mm., nutlets 1 mm.

Nearly allied to *S. discolor* Colebr. of which it has all the characters of corolla and has also, near the top of the spike, the scattered flowers; it bears to that species the relationship that *S. oblonga* Benth. bears to *S. violacea* Heyne. Flowers November to January. As to foliage it most nearly approaches *S. oblonga*, with which species Mr. Hemsley, who has kindly examined it, suggests its union. That species however, besides differing in having all the flowers opposite, occurs at 5000 feet elev. and flowers in April.

* * * * * *Flowers in long narrow racemes, bracts longer than the pedicels and calyx but hardly leafy.*

7 b. SCUTELLARIA PETIOLATA *Hemsl. & Lace*; glabrous, stems slender tufted from thick woody rhizome, leaves petioled ovate acute, base truncate entire, sides each with 2—3 crenations, anterior third entire, bracts ovate entire petioled only the lowest exceeding the calyx, pedicels short, *corolla* tube 5 times exceeding calyx, upper lip notched, *nutlets* granulate.—*Scutellaria petiolata Hemsl. & Lace, Jour. Linn. Soc. ined.*

BELUCHISTAN; assigned districts, *Mr. Duthie's collectors*. DISTRIB. S. Afghanistan at Ziarat. (*Lace* 4006).

Rootstock 1 cm. thick, stems 13—25 cm. long round hardly as thick as crow quills, petioles 0.75—3 cm. long, laminae 2—3 cm. long 1.5—2 cm. across, crenations shallow, both surfaces quite glabrous, bracts 8 mm. long 3 mm. across, pedicels 2 mm., *calyx* 4 mm. long 3 mm. wide, *corolla* tube 22 mm. long, limbus 5 mm. across upper lip 4 mm. long lower 6 mm., *nutlets* elliptic 2 mm. long.—Dries pale reddish brown.

10. SCUTELLARIA SCANDENS *Don, Prodr. Flor. Nepal.* 110 (1825); *Benth., Lab. Gen. et Sp.* 444 (1834).—*S. angulosa Benth. in Wall. Cat.*, 2139 (1828), *Pl. As. Par.* i, 67, (1830), *DC. Prodr.* xii, 430 (1848); *Hook. f., Flor. Brit. Ind.*, iv, 669 (1885).—*S. celtidifolia A. Ham., Monogr. Scutell.*, 27 (1832).

* * * * * *Flowers all axillary.*

15. SCUTELLARIA KINGIANA *Prain*; stems puberulous decumbent slender several from creeping slender rootstock, leaves pubescent petioled ovate orbicular obtuse crenate except the rounded base, flowers axillary pedicelled few, pedicels short, *calyx* puberulous, *corolla* large white.

EASTERN HIMALAYA:—Kang-ma, 60 miles north of Phari and on the banks of the Pe-na-mong Chu. *Dr. King's collector.*

Stems 15—18 cm. long, petioles 5—6 mm., laminae 18 mm. long by 14 mm. wide, crenatures few wide (11—15), *calyx* 4 mm. by 3 mm. at mouth, *corolla* puberulous 30 mm., long (tube 22 mm. long limb 5 mm. diam.), filaments glabrous; nutlets not seen.—A very distinct species only once reported; flowers in August.

34 a. CHAMÆSPHACOS SCHRENK.

Annual dwarf erect branching herbs. *Leaves* shortly petioled; whorls 2-flowered. *Calyx* campanulate subequally 5-toothed, 10-nerved with ring of hairs at limb within, subinflated in fruit, *corolla* tube exserted or included, throat hardly widened, upper lip erect emarginate, lower spreading 3-lobed. *Stamens* exserted or sub-included, anther-cells confluent, oblong. *Style* subequally 2-fid. *Nutlets* oblong narrowed.—Species 4, Western and Eastern Turkestan, Afghanistan, Persia, Beluchistan.

§ EUCHAMÆSPHACOS; stamens exserted, calyx teeth setaceous, nutlets apiculate above. [*Chamaesphacos Schrenk, Enum. Pl. Nov. i, 27.*]

§ § TAPEINANTHUS; stamens sub-included, calyx teeth herbaceous, nutlets rounded above. [*Tapeinanthus Boiss. mss. apud Benth. in DC. Prodr. xii, 436.*]

1. CHAMÆSPHACOS BRAHUICUS *Aitch. & Hemsl.*; densely villous, usually much branched from the base, branches erect, leaves entire, lanceolate, acuminate or acute, narrowed into a short petiole, flowers axillary, shortly pedicelled, *calyx* externally densely villous with spreading hairs, teeth triangular, lanceolate, subulate acuminate, shorter than the tube, *corolla* pink, tube slightly exserted.—*Chamaesphacos brahuicus Aitch. & Hemsl., Trans. Linn. Soc. n. s. iii, 97.*—*Tapeinanthus brahuicus Boiss., Diagn. ser. 2, iv, 29 and Flor. Orient. iv, 680.*

PANJAB FRONTIER; Suleiman range, *Duke*. Peshin valley, *Lace.*
DISTRIB Beluchistan, Khorasan.

Stems 6—9 cm. high, leaves 2.5—3 cm. long, 1.25—1.5 cm. wide, *calyx* 8 mm. long, 3.5 mm. wide (in fruit 5 mm. wide), *corolla* 10 mm. long, *nutlets* 3.5 mm. long.

35 a. MICROTENA PRAIN.

Perennial erect branching herbs. *Leaves* long petioled; *cymes* paniculate or thyrsoid. *Calyx* ovoid, fruiting globose, equally 5-toothed, 12-nerved; throat constricted glabrous within. *Corolla*, upper lip large galeate concave entire, lower spreading 3-fid mid-lobe smaller than lateral. *Stamens* ascending under the upper lip; anther-cells divaricate when young, at length confluent explanate. *Style* bifid, upper lobe very

short. *Nutlets* very minute, apices ovate subtriquetrous, below smooth.—Species 4, S. Chinese and Indo-Chinese.

1. *MICROTÆNA CYMOSA* Prain; minutely tomentose, leaves widely ovate-acute base subcordate margin crenate-dentate, cymes rather lax, *calyx* teeth triangular, *galea* throat below 2-auriculate rather longer than tube, lateral lobes of lip ovate-rotund thrice exceeding central narrowly elliptic, *nutlets* very minute.—*Microtæna cymosa* Prain in Hook., *Icon. Plant.* xix, t. 1872.—*Microtæna cymosa* Forbes & Hemsl., *Jour. Linn. Soc.* xxvi, 306 and xxviii, 116.—*Gomphostemma insuave* Hance, *Jour. of Botany*, 1884, p. 231.—*Plectranthus Patchouli* Clarke in Hook. f., *Flor. Brit. Ind.* iv, 624 and *Jour. Linn. Soc.* xxv, 58.

ASSAM: Naga Hills, Jenkins; Manipur, Clarke; Khasia hills at Sohra 4000, cult., Clarke; Shillong 5000, cult., Mann. BURMA; Shan hills, at Fort Stedman, 3000, Collett n. 921. DISTRIB. S. China.

Stems 40—100 cm., lower branches 15—20 cm. petioles 2—3 cm. long, laminae 4—7 cm. long 3—5 cm. wide, hairy on both surfaces, cymes sometimes loosely paniculate irregularly branched, *calyx* 2.5 mm. (tube 2 mm.), *corolla* 14 mm. (tube infundibuliform 6 mm., upper lip 8 mm.), pollen grains minute oval smooth, *nutlets* 1.25 mm.—The cultivated plant smells very strongly of Patchouli, much more so than does the Patchouli plant of commerce, but it is only grown as a curiosity; the natives of the hills of Assam do not grow this plant or the true Patchouli plant, nor do they know or use the prepared article: the Shan hill plant is devoid of smell.

2. *MICROTÆNA GRIFFITHII* Prain; glabrescent, leaves widely ovate-acute, base cuneate margin duplicate-crenate, cymes rather dense, *calyx* teeth deltoid acuminate, *galea* throat entire half as long as tube, lateral lobes of lip rounded half exceeding central ovate, *nutlets* small.

ASSAM:—"Eastern Bengal" (probably Mishmi hills), Griffith, n. 4059 Kew distrib.; Dibroo Mukh, Masters, 1072.

Stem 40—100 cm., lower branches 15—20 cm., petioles 4—5 cm. long, laminae 7—9 cm. long 4—7 cm. wide, glabrous thinly membranous, cymes thyrsoïd, *calyx* 6 mm. (tube 4 mm.), *corolla* 16 mm. (tube slightly infundibuliform above 11 mm., *galea* 5 mm.), pollen grains minute spherical rugulose, *nutlets* 3 mm.

39. STACHYS LINN.

* * Herbs, stem 4-angled. Whorls few-flowered, bracts minute.

7 b. *STACHYS CORDIFOLIA* Prain; ascending, stems sparsely hirsute with long spreading white hairs, leaves long petioled, ovate obtuse or sub-acute, deeply cordate, crenate, hispid on both surfaces with long simple hairs, floral small shorter than the calyx, ovate subsessile, whorls 4—6-

flowered, distant, *calyx* glandular-pubescent teeth triangular acute, *corolla* tube exerted.

UPPER BURMA; Mawyne on the Yunnan frontier, *J. Anderson*.

DISTRIB. S. W. Yunnan, at Momien, *Anderson*.

Rootstock slender creeping, stem 25—30 cm. simple or branching at the base, radical leaves very small (1 cm. long 0.75 cm. wide, petioles as long), cauline 2.5 cm. long 2 cm. across, petioles 1.5—2 cm., hirsute with spreading hairs, *calyx* widely campanulate, slightly oblique, 5 mm. long (tube 3.5 mm., teeth 1.5 mm.), *corolla* 12 mm. long (tube 7 mm.), pale pink.

A very distinct species.

42 b. MOLUCELLA LINN.

Annual or perennial glabrous herbs, leaves opposite petioled or sessile, incised crenate or entire. Whorls many-fid., all axillary, bractioles subulate pungent. *Calyx* obliquely campanulate below, striately 5—10-nerved, dilated above into a broad reticulated limb elongated behind and marginally 5-mucronate or 5—10-spined. *Corolla* tube included, obliquely annular within, slightly enlarged upward, limb 2-lipped, upper erect concave entire or emarginate, lower 3-fid, lateral lobes oblong sub-erect, mid-lobes spreading obovate. *Stamens* 4, ascending didynamous lower longer, anthers conniving 2-locular. *Style* 2-lobed, lobes subequal subulate. *Nutlets* triquetrous truncate smooth.—Species 3, Mediterranean and Orient.

§ § CHASMONIA; *calyx*-limb 2-lipped, prolonged behind as an erect spinescent tooth and in front as a spreading 3-parted lip with smaller radiating marginal lateral spines.

I. MOLUCELLA OTOSTEGIOIDES *Prain*; glabrous, leaves sessile lanceolate acute quite entire nerveless, bracts 3-partite subulate spinescent.

N. W. FRONTIER; Suleiman range, in the Zam defile leading to Waziristan; 3500 feet, *Stewart*.

Erect, branches slender 4-angled, green, *leaves* 4 cm. base narrowed, tips sharp but hardly pungent, whorls distant, bracts all spiny, *calyx* 9—11-toothed, glabrous rigidly coriaceous, tube 8 mm. exceeding bracts throat naked, upper tooth 6 mm., lower 3 mm. long 4 mm. across, *corolla* 7 mm., tube short, upper lip entire villous, *stamens* exerted.

Habit of *Otostegia Aucheri* Boiss. with *calyx* like that of *Molucella spinosa* Linn. only much smaller; excluded from *Lagochilus* by its glabrous anthers.

42 c. LAGOCHILUS BUNGE.

Smooth rigid herbs or undershrubs with incised leaves often with spinescent-tipped lobes, bracts foliar decreasing upwards. *Whorls*

axillary few-fid. bracteoles acicular often spinescent. *Calyx* tubular-campanular 5-nerved, mouth equal or oblique, teeth 5 subspinescent equal or with the upper prolonged. *Corolla* tube often shortly exerted, annular-pilose within slightly enlarged upwards, limb 2-lipped, upper lip erect, oblong, 2-fid subconave, lower 3-fid, lateral lobes short acute erect, central spreading wide emarginate. *Stamens* 4, didynamous, lower longer ascending, filaments adherent, anthers 2-locular, lobes parallel or divergent, margins ciliate. *Style* 2-fid, lobes subequal subulate. *Nutlets* 3-quetrous apex truncate.—Species about 15, Oriental.

* Lower axils armed with sterile spinescent bracts.

1. *LAGOCHILUS CABULICUS* Benth.; stems pubescent, setose or glabrous, white, *leaves* palmately 3-5-fid, lobes oblong entire or incised obtuse or acute mucronate or not, *calyx* hispid hirsute or glabrous, teeth oblong subcuneate obtuse mucronate longer than the tube, *corolla* tube short, upper lip villous.—*Lagoehilus cabulicus* Benth., DC. Prodr. xii, 515; Boiss., Flor. Orient. iv, 769.

GILGIT; Giles. DISTRIB. Afghanistan, Turkestan.

Stems 18—25 em. high 4-angled smooth, leaves 2 em. long 1·5 em. across, petioles 1 em., lobules 2 mm. across, only those of the uppermost leaves and bracts usually mucronulate, barren spines 8—10 mm. long glabrous, with a pair of minute lateral suberect spinules on upper surface near base, floral spines 22—25 mm. long, hispid setose or at length glabrous with the lateral spinules 10 mm. long, aecrose and setose-hispid, *calyx* tube 5 mm., lobes 8 mm. long, 4·5 mm. across, margins of lobes hispid-haired, tips acuminate mucronulate.

44. OTOSTEGIA BENTH.

1. *OTOSTEGIA LIMBATA* Boiss. in Flor. Orient. iv, 778 (1879); Benth. mss. in Flor. Brit. Ind. iv, 680 (1884).

2. *OTOSTEGIA AUCHERI* Boiss.; glabrous, leaves sessile elliptic-lanceolate acute with spinescent tips, quite entire, nerveless, bracts subulate spinescent.—O. Aueheri Boiss., Diagn. ser. v, 40; Benth. in DC. Prodr. xii, 523; Jaub. et Spach, Ill. Pl. Or. iv, 124, t. 382; Boiss., Flor. Orient. iv, 778.

BRITISH BELUCHISTAN; Nal, Duke; Quetta, Lace, 3666 (in Herb. Watt.) DISTRIB. Throughout Beluchistan and S. Persia.

An erect spiny bush branching below, young branches slender 4-angled green, spines 6—12 mm., *leaves* 2·5 em. base narrowed, minutely puberulous below, smooth above, tips pungent, whorls distant, bracts all spiny rounded straight pungent, *calyx* sparsely hairy, throat naked, flowering 6 mm., turbinate with broad membranous 5-toothed limb, upper tooth ovate acuminate, lateral smaller, lower very large rounded spine-

tipped, *corolla* 13 mm., tube short, upper lip short emarginate villous, *stamens* exerted, *nutlets* smooth truncate flattened, 3 mm. long.

Very closely related to *Ostostegia limbata* Boiss. (*Flor. Orient.* iv, 778) from which it differs by its glabrous habit, spinescent-tipped leaves, bract-spines all rounded, broader lower *calyx* lobes and shorter *corolla* upper lip.

45. LEUCAS R. BR.

§ § ORTHOLEUCAS.

* * Perennial rooted. Branches 4-angled, hairs on them erect or spreading (not deflexed). *Calyx* teeth not $\frac{1}{4}$ the length of the tube.

5 b. LEUCAS COLLETTI Prain; everywhere densely softly silky with long spreading hairs, stems simple their hairs spreading and angles obtuse, leaves all sessile very small thick ovate acute, bases truncate or subcordate entire their margin elsewhere coarsely serrate, whorls many flowered, bracts linear short, *calyx* truncate teeth minute erect, *corolla* tube exannulate.

UPPER BURMA; Popah hill, 5000, Collett n. 29. DISTRIB. S. China.

Rootstock woody, stems short 8—15 cm. rather stout bluntly angled and distinctly grooved, leaves 1.5 cm. long 1.25 cm. wide close set softly silky below and above, *calyx* 5 mm. long, *corolla* 7 mm. long, tube not exerted.

Very like a densely silky form of *Leucas lanata* from the dry hills of the Deccan (*L. collina* Dalz.) but easily distinguished on analysis by the *calyx*, within densely villous at the mouth only and not (as in all forms of *L. lanata*) sparsely hirsute throughout the upper third, and by the much shorter *corolla* without any trace of an annulus.

48. NOTOCHÆTE BENTH.

1. NOTOCHÆTE HAMOSA Benth.; add to localities of *Flora of Brit. India* iv, 694.

ASSAM: Naga Hills, 4000—6000 feet, Clarke, Prain.

49. EREMOSTACHYS BUNGE.

4. EREMOSTACHYS THYRSIFLORA Benth.; root-leaves obtusely incised toothed narrowed into a long petiole, floral sessile oblong dentate, lower as long as flowers, whorls in lax 5—7-flowered cymes forming lax racemes, the terminal flower of each cyme sessile, the others pedicelled along one side of the cyme branches, bracts 2, linear-subulate softly hairy erect as long as the calyx, *calyx* hoary-tomentose infundibuliform, teeth long subulate from a wide base shorter than the corolla.—*Eremostachys*

thyrsiflora Benth., DC. Prodr. xii, 248; Boiss., Flor. Orient. iv, 797; Bunge, Lab. Pers. 79; Regel, Acta Hort. Petrop. vi, 381 and ix, 567, (Monogr. Eremostach. 41), t. 9, f. 4, 5.

WESTERN PANJAB; Suleiman hills, Duke; Assigned districts, Hamilton; Lace. DISTRIB. Afghanistan (Griffith, Bellew); Beluchistan (Stocks).

Rootstock woody, stem short rather thick simple leafless hoary pubescent or glabrate 20—30 cm. high, radical petioles 3—6 cm. long, laminae 5—8 cm. long 3—4 cm. wide, floral leaves 4 cm. long 1.5 cm. wide, cymes 3—5 cm. long, bracts 20—30 mm. long 2—3 mm. wide, pedicels 1—3 mm. long, calyx tube 17—28 mm. long 8 mm. wide, teeth 5 mm. long, corolla tube 22 mm. long, lips 9 mm. long, ovary densely villous.

51. GOMPHOSTEMMA WALL.

1 b. GOMPHOSTEMMA WALLICHII Prain; stems densely tomentose stout erect, leaves rugose, petioled truncate or subcordate at the base, margin serrate, apex acute, densely tomentose beneath, spikes erect interrupted, bracts truncate cordate at the base decreasing upwards, corolla tube hirsute within more than twice as long as calyx.—G. strobilinum VAR. elatius Benth. in Wall. Cat. n. 2151/2 and Pl. As. Rar. ii, 12.—G. strobilinum Benth. Lab. 647 and DC. Prodr. xii, 500; Walp., Rep. iii, 892; Miq., Flor. Ind. Bat. ii, 989 (all in part and not G. strobilinum Wall. Cat. n. 2151/1.—G. strobilinum VAR. typica Hook. f., Flor. Brit. Ind. iv, 696 (in part).—"G. elatius" Wall. mss.

ASAM; Naga Hills, Kohima, 4500 feet, Phesama, 4000 feet, Prain. UPPER BURMA; Taong-doung Mts, Wallich; Karen hills, O'Riley; Shan hills, at Pwehla, Collett; Maymyo, 4000 feet, King's collector. DISTRIB. Western Yunnan.

Stems 200—250 cm. high, petioles 1—2 cm., laminae 11—14 cm. long, 7—9 cm. wide, calyx 11 mm. long, corolla 30 mm. long, pale sulphur or white, rarely pink, bracts quite sessile cordate at the base, lower 40 × 20 mm., upper 12 × 8 mm.

The species resembles *G. Heyneanum* (G. strobilinum VAR. Heyneanum Hook. f.) which is, however, distinct and is recognised at once by its small purplish corollas hardly longer than the calyx. Its nearest ally is *G. nutans* which has the same calyx and corolla, but differs in having slender stems, small leaves and short dropping uninterrupted spikes. It is much less like *G. strobilinum* (type), with which Mr. Bentham associated it; that species has larger leaves tapering towards the base, calyx softly tomentose with long hairs, corolla somewhat shorter and bracts much smaller, cuneate at the base and subequal along the spike.

2 b. *GOMPHOSTEMMA CURTISII* Prain; stems scabrid, leaves long-petioled ovate, or elliptic-ovate, denticulate, pubescent above tomentose beneath, whorls in large thyrsoid, cymes along the old wood below the leaves, bracts equalling the calyx, entire lanceolate with filiform points, calyx lobes narrowly lanceolate, with filiform points, longer than the tube.—*G. Curtisii* Prain in *Ann. Roy. Bot. Gard., Calcutta*, iii, *ined.*

MALAY PENINSULA; Perak, Wray n. 1233; *Scortechinii* n. 924. Penang, *Curtis* n. 1310.

Stems flexuose 90—120 cm. long not rooting below, leaves distant, petioles 3—12 cm., laminae 8—12 cm. long, 5—7 cm. wide, cymes 5—6 cm. long, bracts 10—15 mm. long, calyx 14 mm. long, corolla 28 mm. long, nutlets usually all matured, oblong, rounded above triquetrous below, glabrous, punctulate.

Nearest to *G. pedunculatum* from which it is distinguished by its narrower entire bracts and longer narrower calyx teeth as well as by its smaller leaves with longer petioles. As in *G. pedunculatum* the bracts and calyces are red-brown; the corolla, however, is in this species white.

6 b. *GOMPHOSTEMMA SCORTECHINII* Prain; stems, leaves beneath and whorls sparsely brown-tomentose, leaves short-petioled elliptic acute or oblanceolate acuminate entire or subserrate, or leaves glabrous beneath tomentose above, whorls many-flowered pedunculate, flowers pedicelled bracts small subulate, calyx ribbed teeth long triangular, corolla pubescent large.—*G. Scortechinii* Prain in *Ann. Roy. Bot. Gard., Calcutta*, iii, *ined.*

MALAY PENINSULA; Perak, Gunong Ijok, *Scortechinii* n. 1225.

Stems 60—100 cm., petioles 0.5—1 cm. long, laminae 20—30 cm. long, 12—16 cm. wide, narrowed or not towards the base, bracts 8 mm. long, peduncles very short, pedicels 8—10 mm., calyx 22 mm. (teeth 12 mm.), corolla 60 mm., upper lip emarginate, style bearded near top, nutlets 8 mm., ovate oblong, sparsely hairy at top.

Near *G. oblongum* and *G. lucidum*; differs from both in having peduncled whorls and pedicelled flowers, and is larger than either in all its parts.

7 b. *GOMPHOSTEMMA HEMSLEYANUM* Prain; stems and leaves beneath hoary-tomentose, leaves petioled rugose elliptic-ovate acute narrowed to the base, serrate, hirsute above, whorls sessile many-flowered, bracts lanceolate or linear shorter than the calyx, calyx teeth longer than tube, corolla not exceeding calyx, tube hirsute within.—*G. Hemsleyanum* Prain ex *Coll. & Hemsl., Jour. Linn. Soc.* xxviii, 116; *Ann. Roy. Bot. Gard., Calcutta*, iii, *ined.*

UPPER BURMA; Meiktila, *Collett* nm. 17, 887.

Stems erect, over 60 cm. high, petioles 1—3 cm. long, laminae 10—18

cm. long, 4—7 cm. wide, *calyx* 14 mm. long, *corolla* 13.5 mm. long, incurved, *nutlets* subglobose smooth, usually all matured.

A very distinct species.

10 b. *GOMPHOSTEMMA MICROCALYX* Prain; stems woody and leaves beneath pubescent or tomentose, leaves long-petioled subrugose oblong or ovate, acute crenulate pubescent above, whorls small few-flowered sessile in the lower leaf-axils and on the stem below, bracts small ovate acute, *calyx*-tube narrow teeth very short triangular, *corolla* slender limb small glabrous.—*Gomphostemma microcalyx* Prain in *Ann. Roy. Bot. Gard., Calcutta*, iii, *ined.*

MALAY PENINSULA; Perak, Larut, *Scortechini* n. 942, *Kunstler* n. 2155, *Wray* n. 835; Ulu Bubong, *Kunstler* n. 10,455.

Stems 60—150 cm. high hoary, petioles 4—5 cm. long, laminae 12—15 cm. long 7—9 cm. wide, base abruptly narrowed, whorls about 6-fld., bracts 6—7 mm. long, *calyx* 7 mm. long teeth 2 mm., *corolla* 26 mm., orange, tube very slender, throat hardly inflated, both lips small.

Resembles *G. Thomsoni* but with a very different calyx and with much smaller fewer-flowered whorls and smaller leaves.

53. TEUCRIUM LINN.

§ TEUCRIS. *Peduncles* opposite axillary 1—3 fld. racemose or paniculate. *Calyx* campanulate equally 5-toothed.

1*. *TEUCRIUM SCINDICUM* Prain; hoary, stems many rigid shortly paniculately branched above, leaves ovate orbicular subpinnatisect segments shortly narrowly linear margins recurved, pedicels $\frac{1}{2}$ exceeding calyx and bracts, *calyx* subglabrous shortly campanulate teeth triangular shorter than tube, *corolla* longer than calyx lower lobe elliptic-cucullate obtuse, filaments exerted glabrous, *nutlets* minutely pruinose.

SCINDE:—*Stocks*; (specn. in *Herb. Dalzell*).

An erect many-stemmed perennial with thickened rootstock, 30—40 cm. high, leaves 14—16 mm. long 9—10 mm. wide, segments 6 mm. by 0.5—1.5 mm., pedicels 8 mm., *calyx* 8 mm., (tube 5 mm. teeth 3 mm.), *corolla* 15 mm. long, central lip-segment 6 mm. long 5 mm. across, filaments 7 mm. long, *nutlets* 2.5 mm. elliptic, slightly rugulose.

Near to *P. Taylori* to which *Stocks* in *Herb. Dalzell* had referred it but differs in having the filaments all glabrous whereas the anterior pair in *P. Taylori* are hirsute below; from *P. orientalis*, which it also comes near, it differs in having the terminal lobe of corolla rounded instead of acute; from *P. parviflorum* it differs in having the filaments exerted. It is diagnosed at once from all three by the teeth of the calyx being shorter than the tube.

§ § SCORODONIA. (*F. B. I.* iv, 700).

6 b. *TEUCRIUM WATTII* Prain; stem stout diffusely branched rufous-villous, leaves long-petioled oblong-ovate acute, base cuneate entire margin elsewhere sharply irregularly toothed, racemes paniced bracts linear-lanceolate hardly exceeding pedicels, *calyx* campanulate declinate, upper tooth rounded, 2 lower lanceolate, *corolla* tube subequalling calyx, terminal lobe ovate the four upper rounded obtuse.

MANIPUR:—Kassome summit, 6000, *Watt*, n. 5,127.

A straggling herb, stems 80—120 cm. long almost terete below, densely rufous-villous with long spreading hairs, leaves 13—15 cm. long, 5—7 cm. across, membranous, nerves softly hirsute, petioles densely villous 5—7 cm. long, racemes rufous-villous, bracts 6—7 mm. long, pedicels 6 mm. long, *calyx* 7 mm. (tube 4 mm.) upper tooth ovate acuminate twice as broad as rounded obtuse lateral and as long as lower pair connivent lanceolate acute, teeth within and calyx throat setose, *corolla* tube 6 mm. long, lip 7 mm., filaments sparingly hairy.

Nearest to *T. quadrifarium* from which it differs by the petioles being 3 times as long, the leaves cuneate not cordate at base, and membranous not rugose, and by the bracts which are inconspicuous instead of large ovate. The calyx in both is very similar but the corolla-tube is in *T. Wattii* longer and the upper pair of lobes are rounded like the lateral, not, as in *T. quadrifarium*, acute.

§ § § SCORDIUM. (*F. B. I.* iv, 702).

9. *TEUCRIUM SERRATUM* Benth.; perennial sparingly hairy or glabrate, stems leafy, leaves small lanceolate serrate base cuneate apex acute, bracts lanceolate longer than flowers, branches long slender paniculate, whorls 2—4-fl. rather remote, pedicels $\frac{1}{2}$ exceeding calyx, *calyx* teeth triangular subequal shorter than campanulate gibbous tube, *corolla* $\frac{1}{2}$ exceeding calyx, filaments subexserted sparsely hirsute, *nutlets* small glabrous.—*Teucrium serratum* Benth., *DC. Prodr.* xii, 586; *Boiss., Flor. Orient.* iv, 813.

N.-W. HIMALAYA; Gilgit, *Giles*. *DISTRIB.* Afghanistan.

Stems 25—40 cm. high, rootstock slender, leaves 30—45 mm. by 8—14 mm. decreasing upwards, pedicels 9—11 mm. long, *calyx* 6 mm. long (tube 4 mm. teeth 2 mm.), *corolla* 8 mm. long, *nutlets* 1.5 mm., spherical, distinctly rugulose.

Near *P. Scordium* Linn. which it follows and from which it differs by having leaves decreasing upwards instead of uniform, and acute at the apex instead of obtuse, also by having distinctly longer pedicels and a slightly smaller corolla.

§ § § § POLIUM. *Whorls* condensed in ovate or globose terminal heads. *Calyx* tubular campanulate teeth subequal.

10. *TEUCRIUM STOCKSIANUM* Boiss.; dwarf shrubby densely hoary-

pubescent, branching from the base with rigid tufted stemlets again decussately branching, leaves small elliptic subentire, heads few-fl. dense small, flowers small sessile, *calyx* campanulate hoary, teeth short ovate obtuse, *corolla* yellow $\frac{1}{2}$ exceeding calyx, anthers exerted.—*Teucrium Stocksianum* Boiss., *Diagn. ser. 2, iv, 58* and *Flor. Orient. iv, 821*.—*T. leucocladum* Herb. Ind. Or. H. f. § *T.*, nec Boiss.

WESTERN PANJAB:—Peshawar district, *Stewart*; Dera Ghazi Khan district, *Alcock*; Dera Ismail Khan district, *Williams*; Quetta, *Lace*. DISTRIB. Beluchistan, S. Afghanistan.

Rootstock stout woody, stems 10—12 cm., branches 3—5 cm., leaves 13 mm. by 6 mm. apical third obtuse crenate, crenations shallow basal two-thirds cuneate entire, bracts 6 mm. by 3 mm. entire or slightly crenate at apex, *calyx* 6.5 mm. (tube 6 mm.), *corolla* 8 mm. Dr. Alcock has described this species in the field, his notes say *inter alia* “leaves greyish green, odour highly aromatic, taste very bitter, flowers yellow; “not met with below 5000 feet on the Suleiman hills.” It is most nearly allied to *T. leucocladum* from Arabia and *T. cuneifolium* from Crete.

[In concluding the Writer has to acknowledge his great indebtedness to Mr. W. B. HEMSLEY, F. R. S. who has kindly compared specimens of the majority of the species here described with specimens at Kew. As is always the case there are a few points whereon opinions differ and in view of the fact that Mr. Hemsley's experience and skill are much the greater, the writer feels it only just to mention the chief of these, since they affect the systematic value of the plants concerned.

Mr. Hemsley thinks that *Plectranthus Brandisii* (p. 296) might really be united to *P. Stracheyi* and that *Scutellaria andamanica* (p. 307) may be only a form of *S. oblonga*; he believes too, that the two forms of *Zataria* (p. 300) are not specifically distinct but that the two forms included under *Nepeta glomerulosa* (p. 304) are. In the two last cases Mr. Hemsley is almost certain to be right; in the two first it is possible that the writer has laid too great stress on the fact that both plants exist at elevations, and flower at seasons of the year different from those characterising the species which they respectively resemble. These characteristics may be only due to their rather remote geographical areas; in any case *Scutellaria andamanica* and *Plectranthus Brandisii* may be looked on as representative of *S. oblonga* and *P. Stracheyi* respectively. Still the corolla of *S. andamanica* is somewhat different from that of *S. oblonga*, and the calyx of *P. Brandisii* from that of *P. Stracheyi*. The prominent ruby-red glands characteristic of the outer surface of the calyx and under surface of the leaves of *P. Stracheyi* are absent from *P. Brandisii* which has leaves exactly like those of *P. Walkeri* and a calyx like that of *P. Stocksii*.

On the other hand the writer believes *Dysophylla communis* (p. 299) to be only a form (hardly distinguishable as a variety) of *D. auricularia*.]

